

FIG. 1

Fig. 2

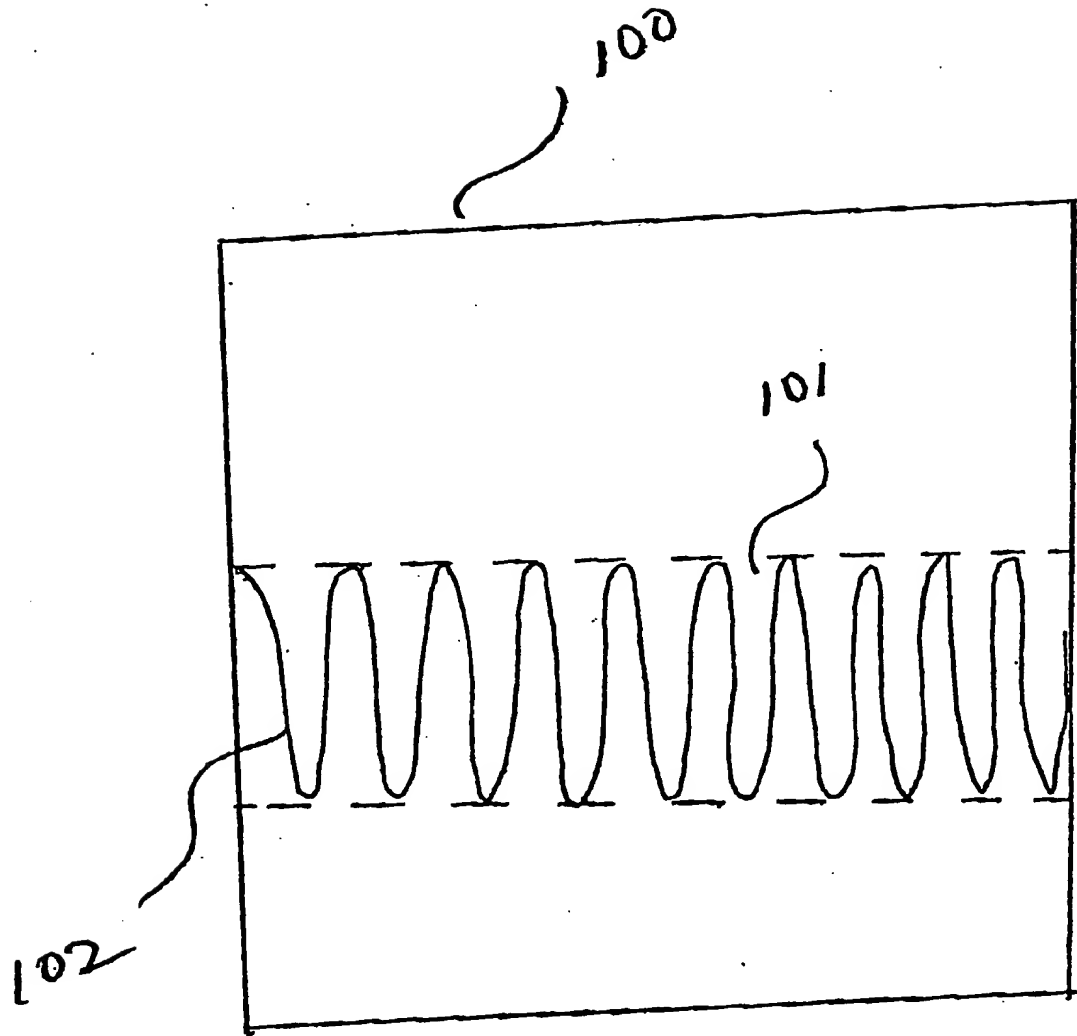
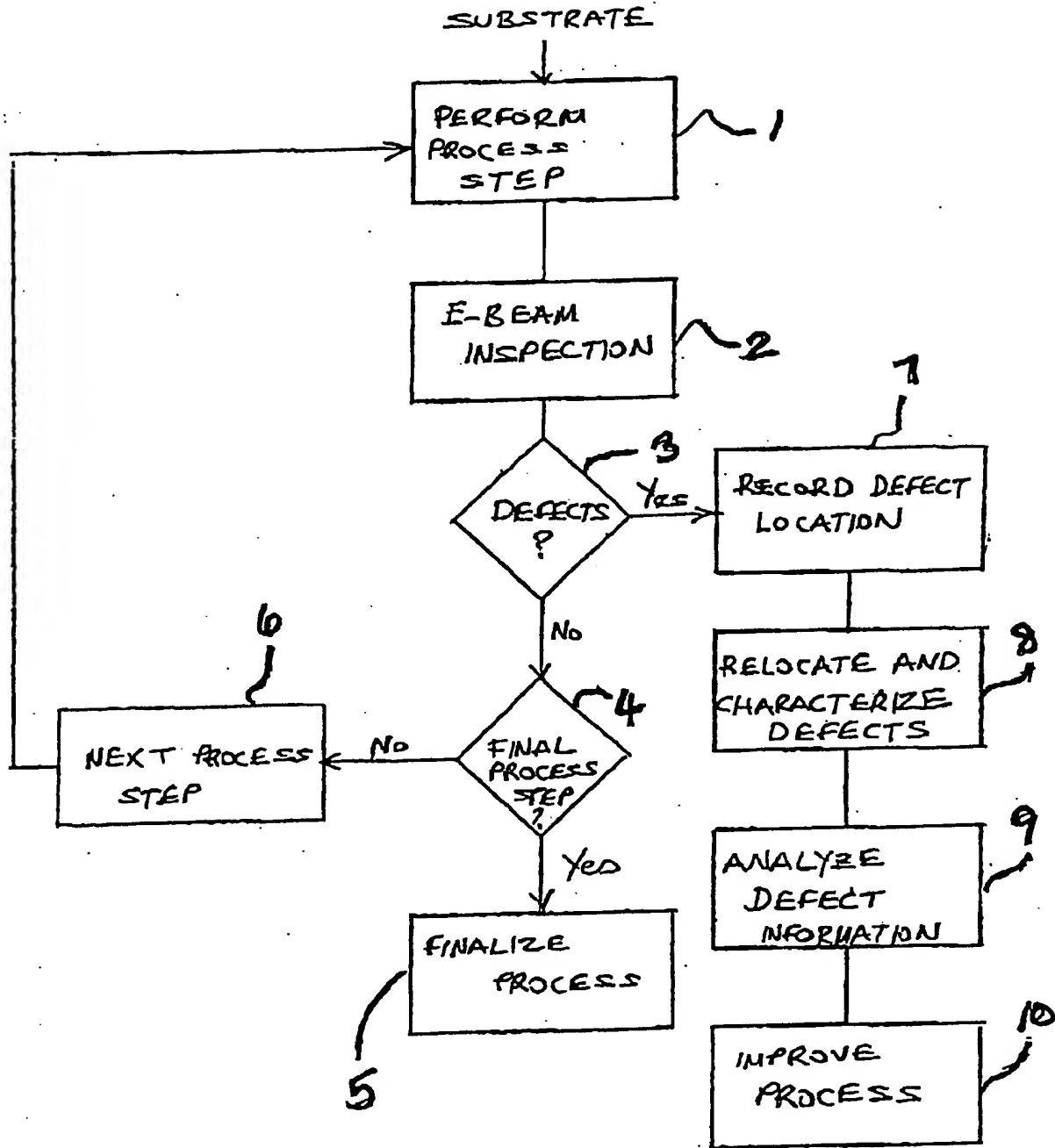


Figure 3



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FIGURE 4a

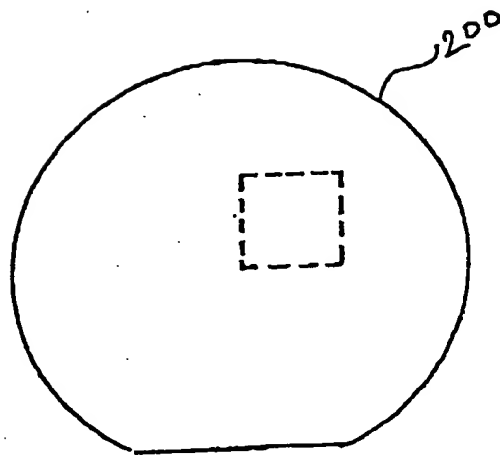
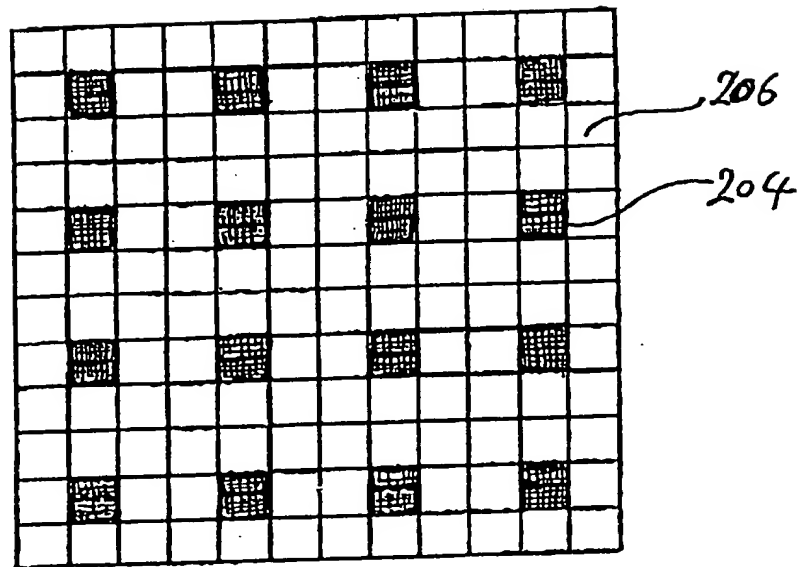


FIGURE 4b



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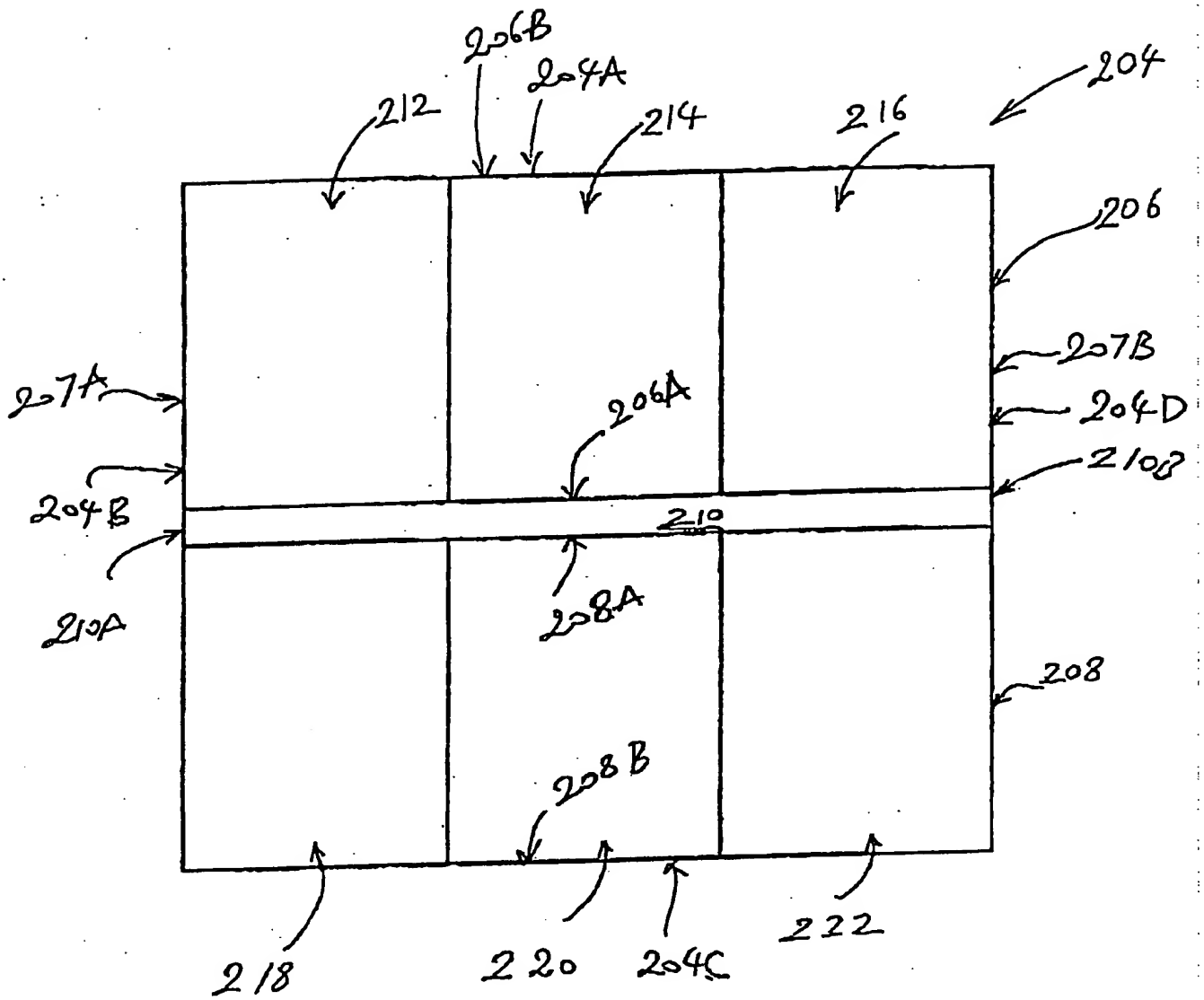


Fig. 4C

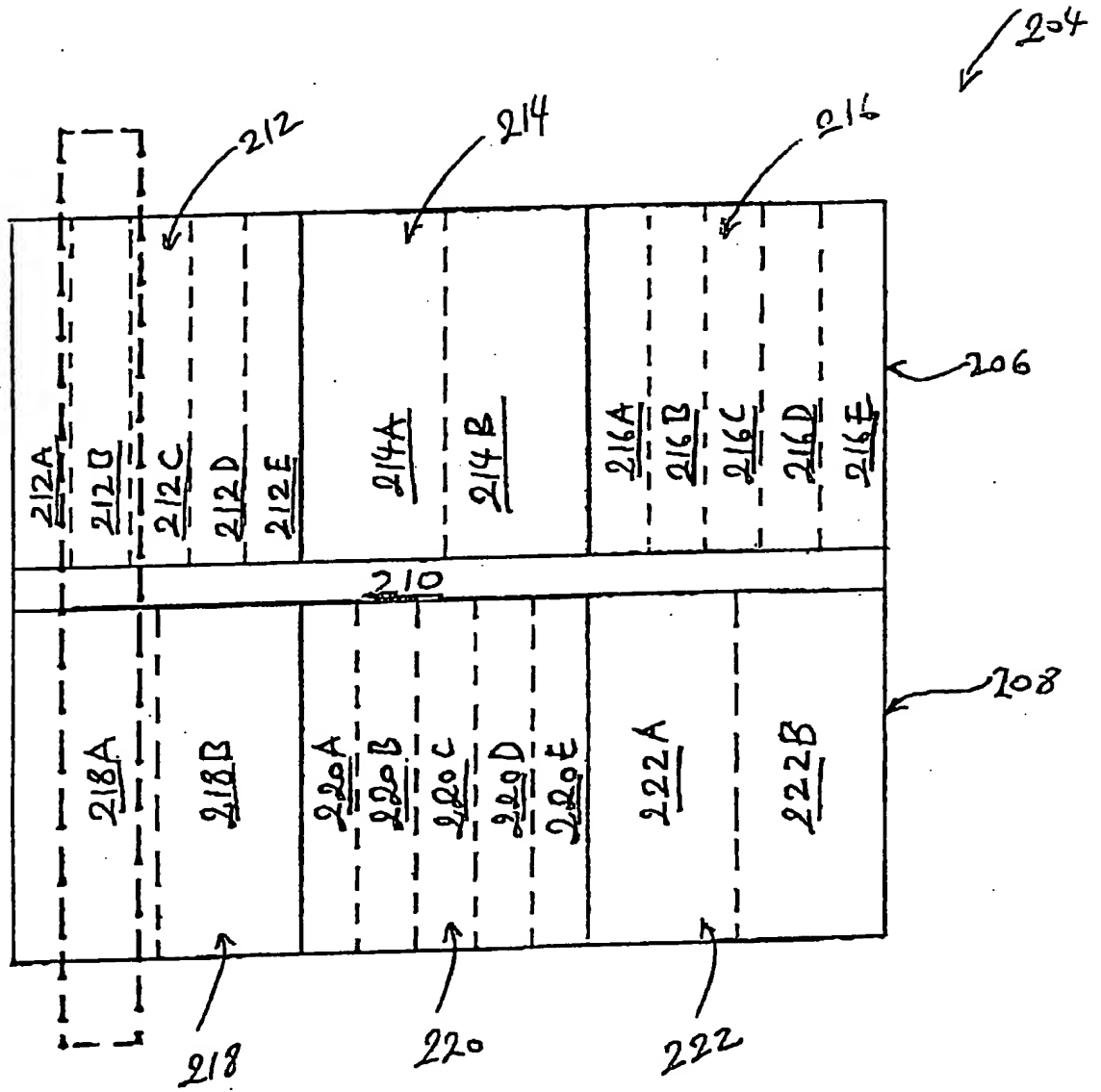


Fig. 4D

FIGURE 5

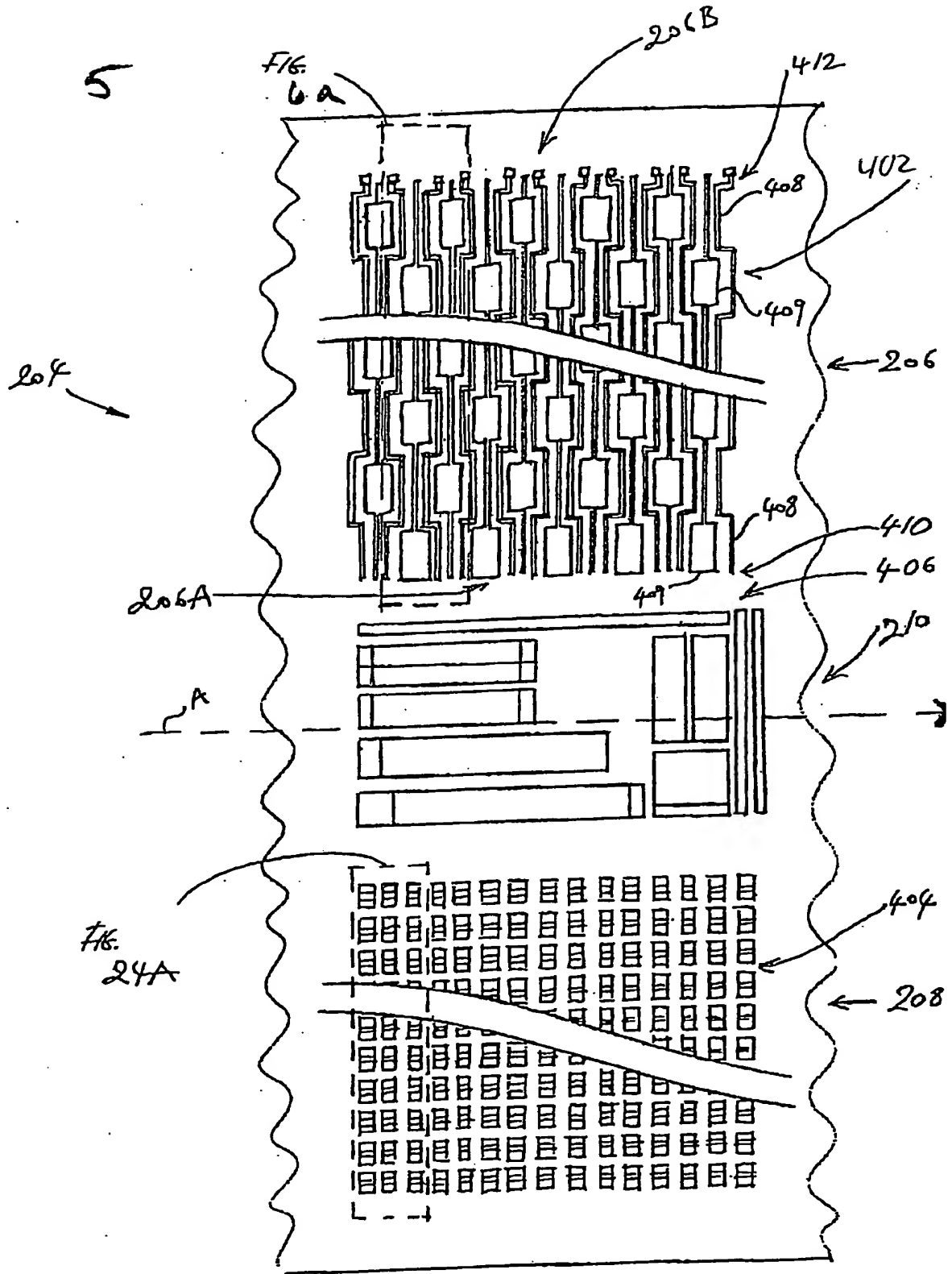


FIGURE 6a

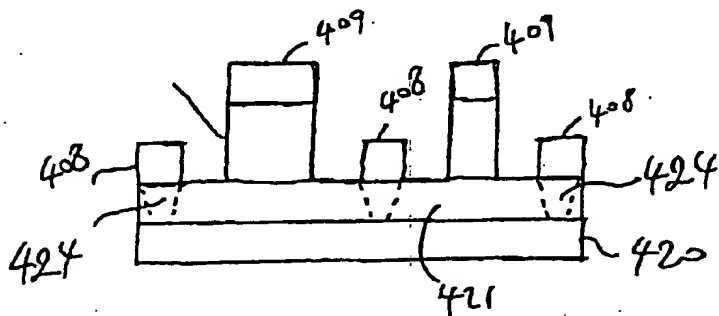
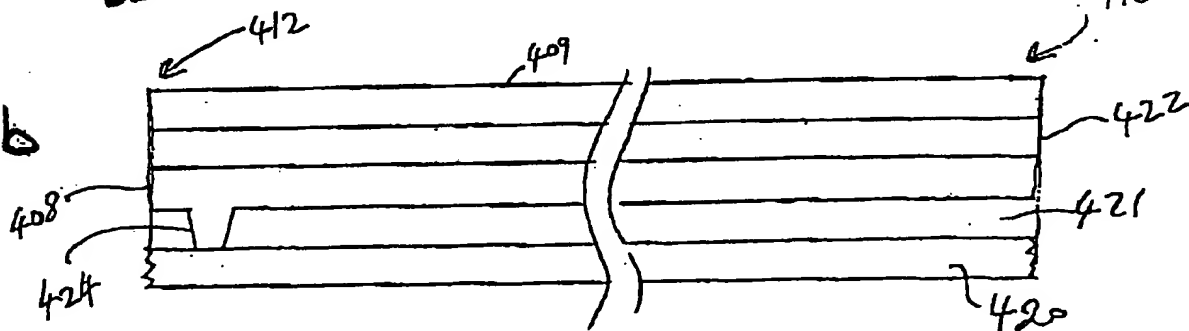
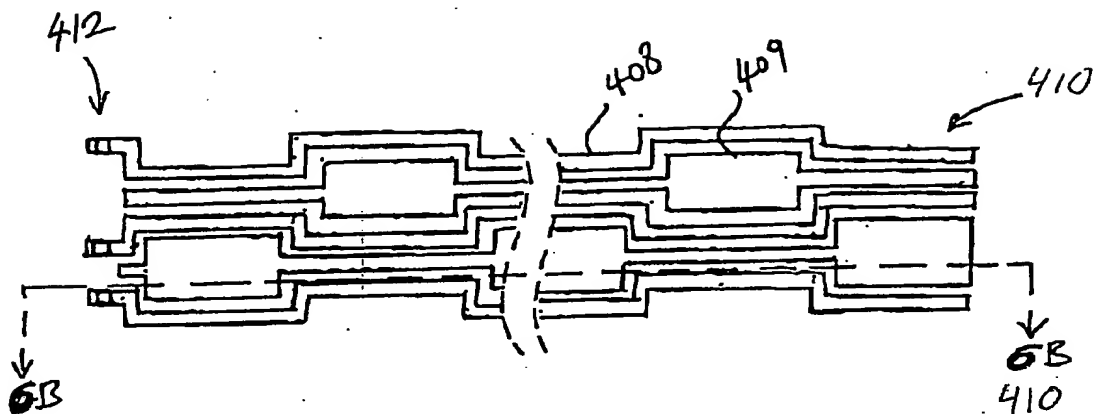


Fig. 6c

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Figure 7a

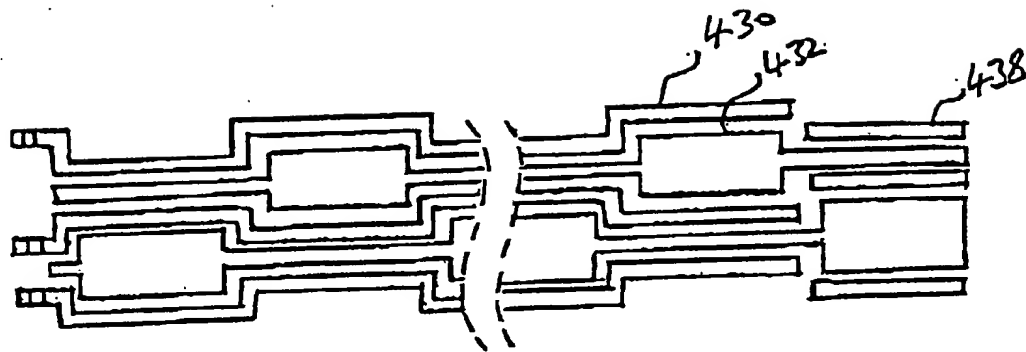
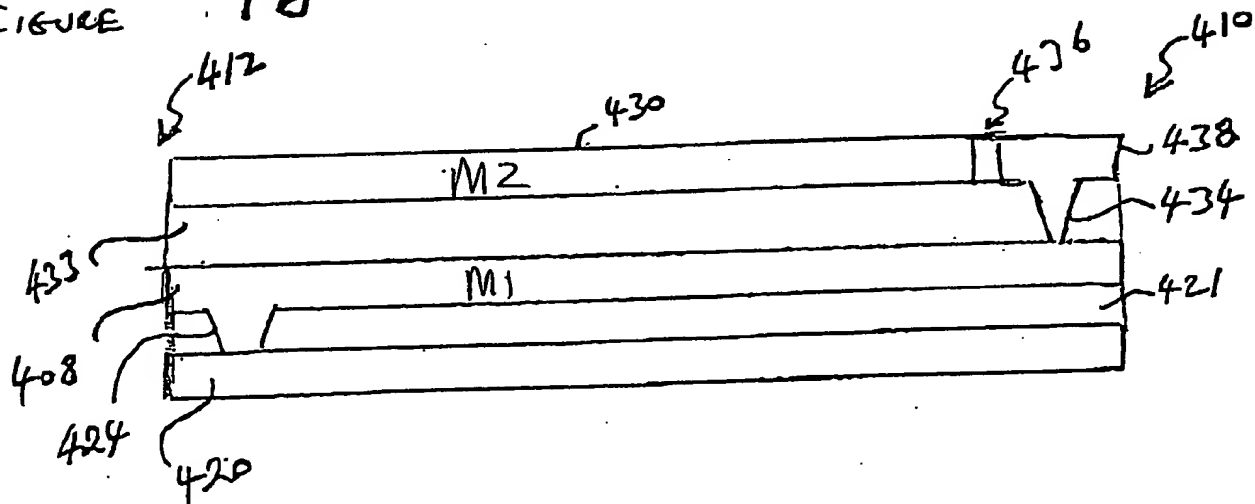
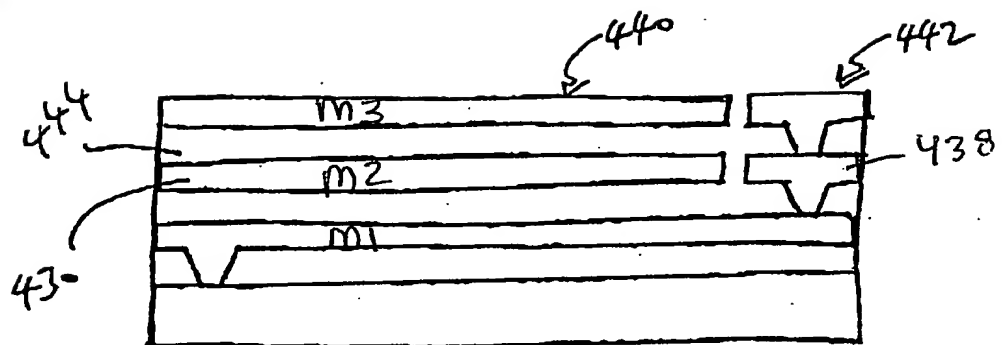


FIGURE 7b



FIGURE

8



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FIGURE

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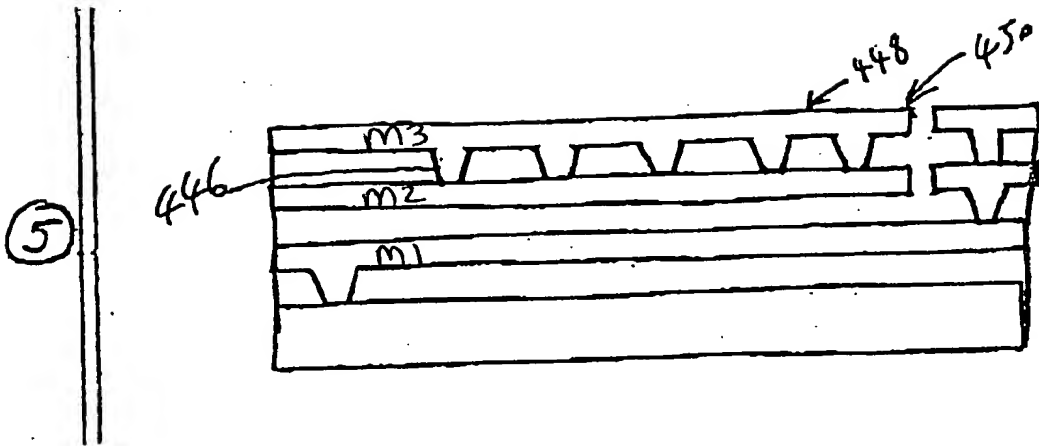
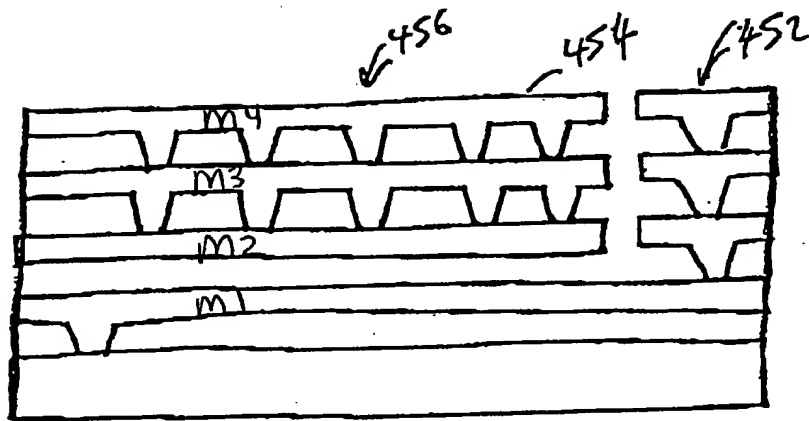


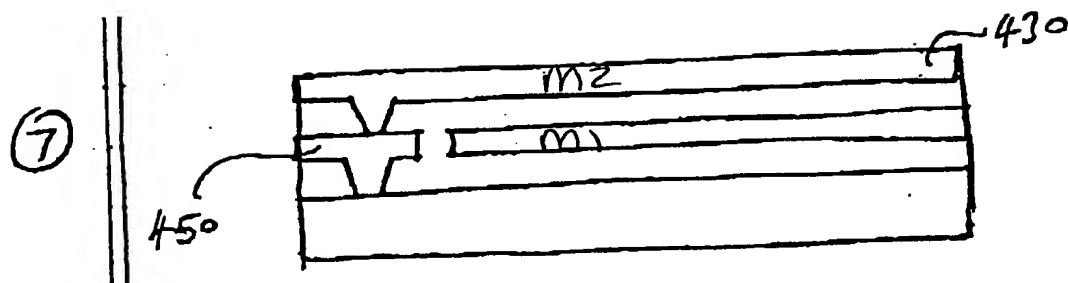
FIGURE 10



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FIGURE

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FIGURE 12

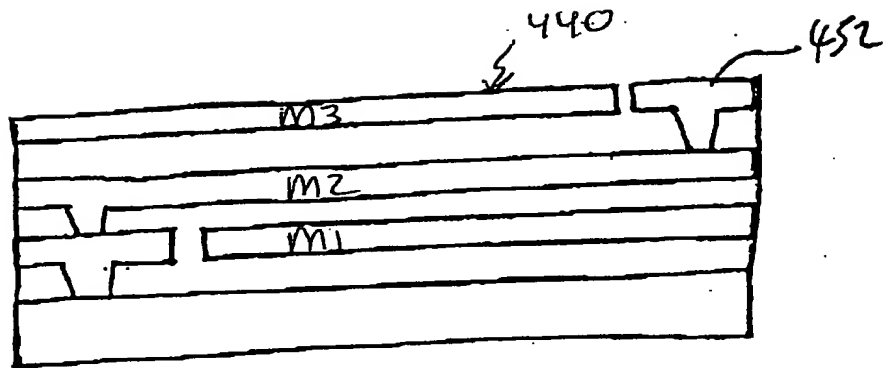
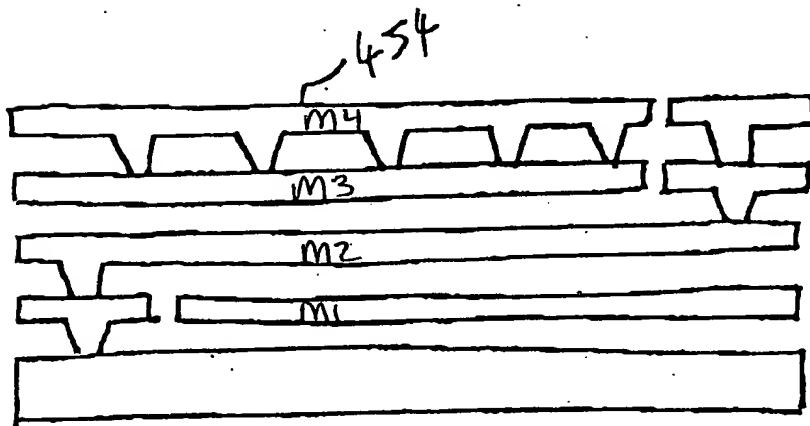
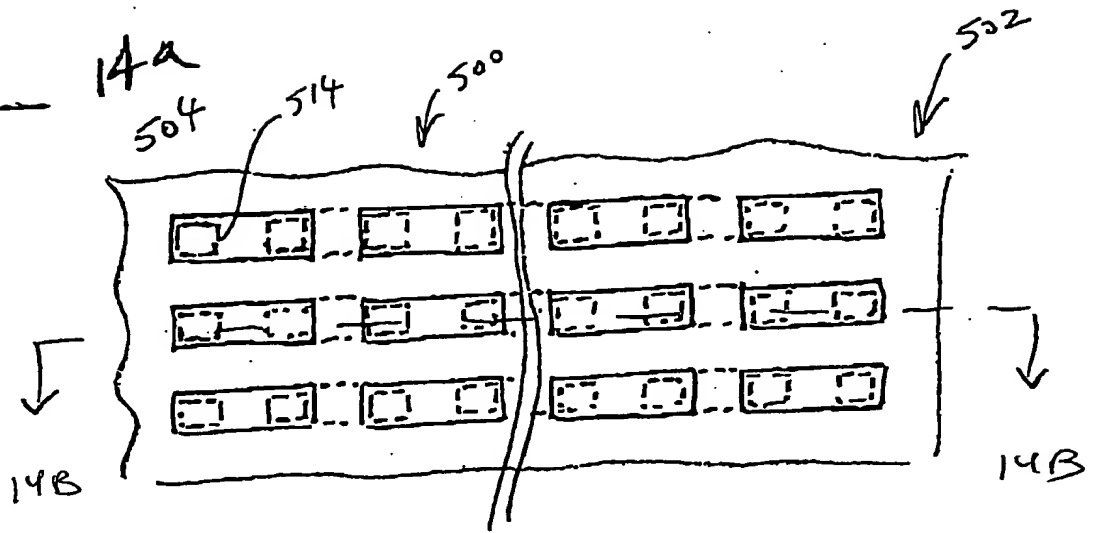


FIGURE 13

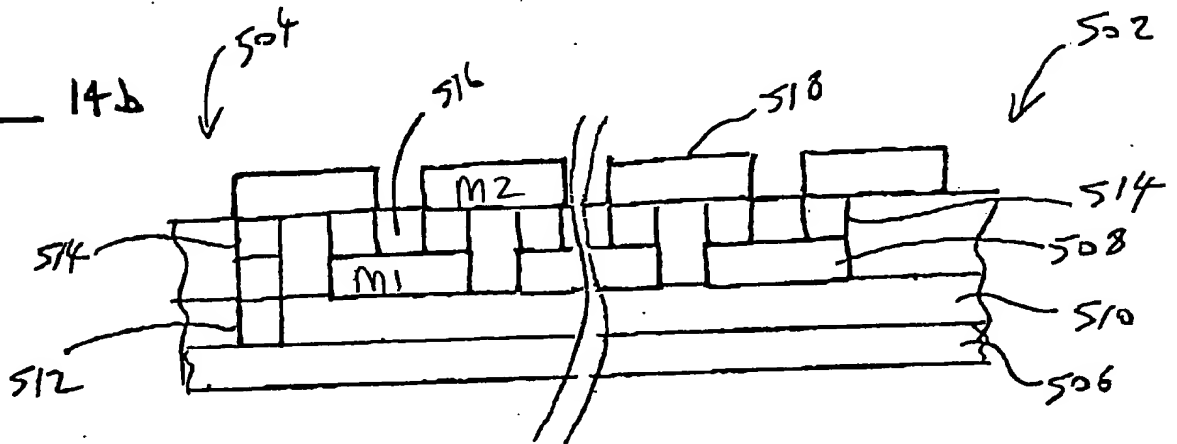


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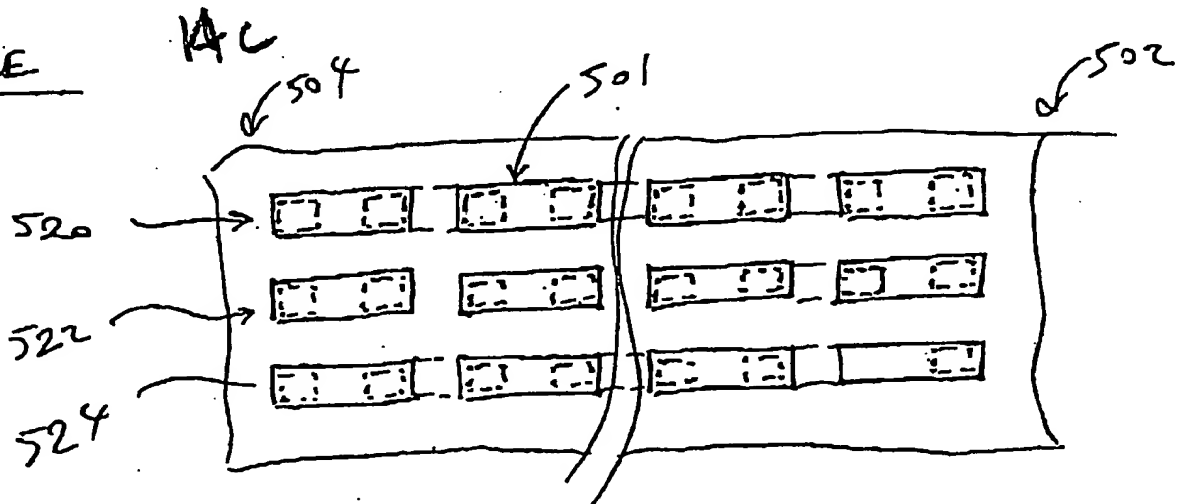
FIGURE



FIGURE



FIGURE



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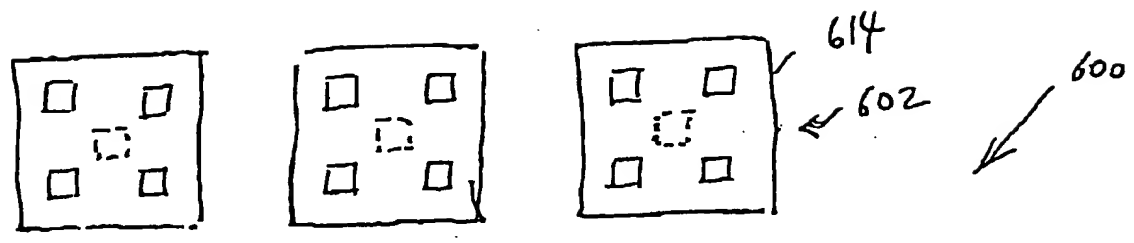
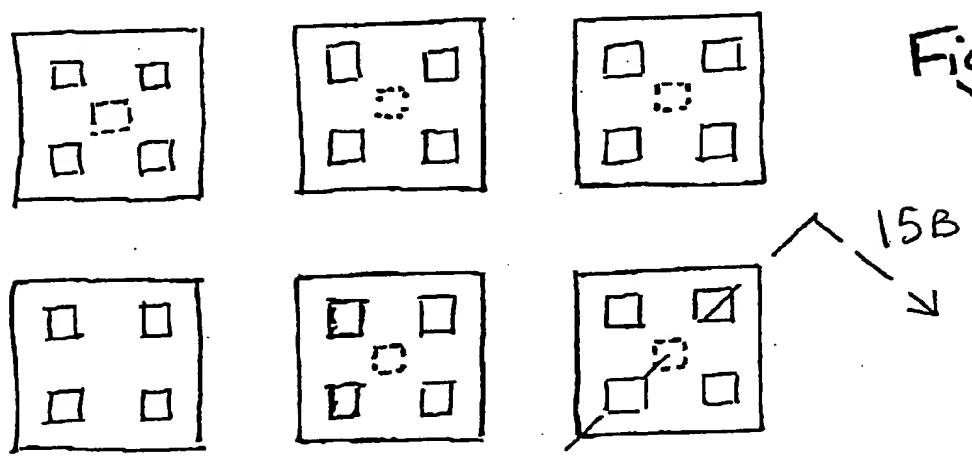
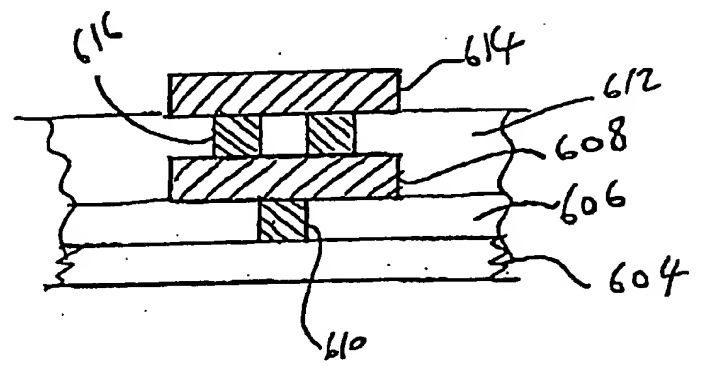


Figure 15A



15B

FIGURE 15B



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FIGURE 16A

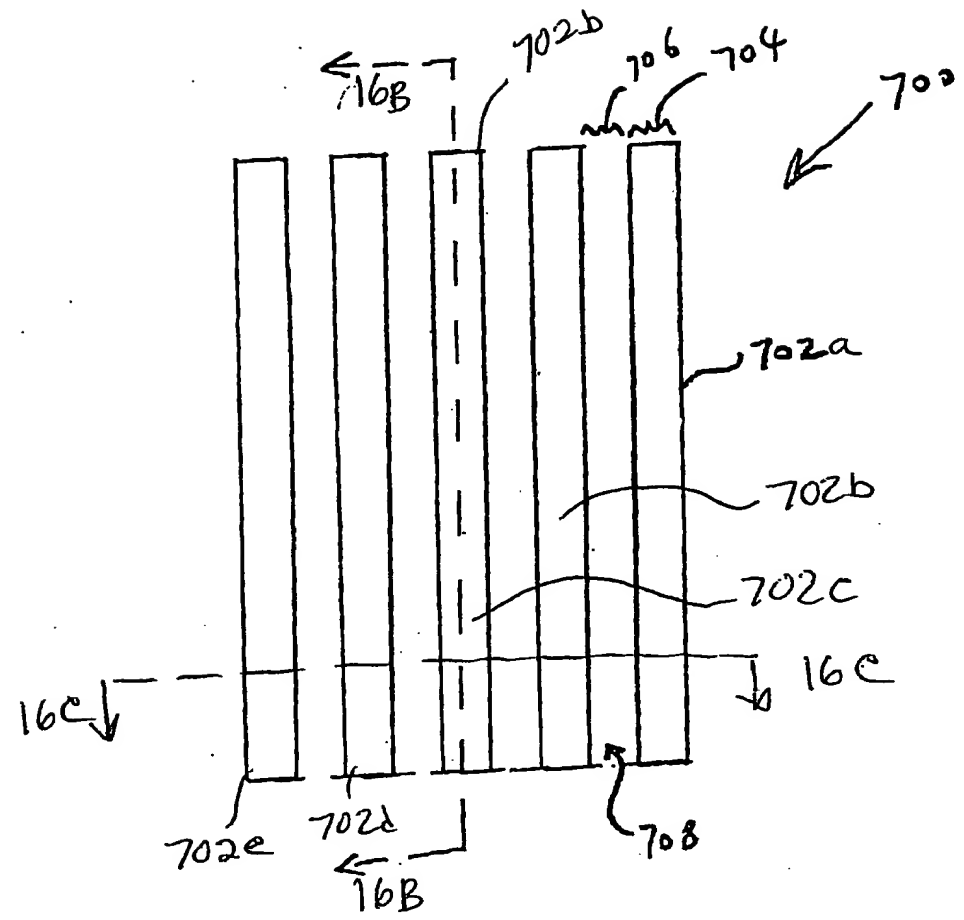


FIGURE 16B

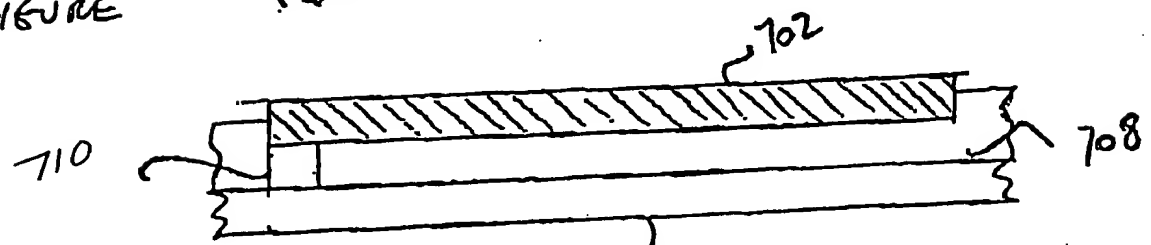


FIGURE 16C

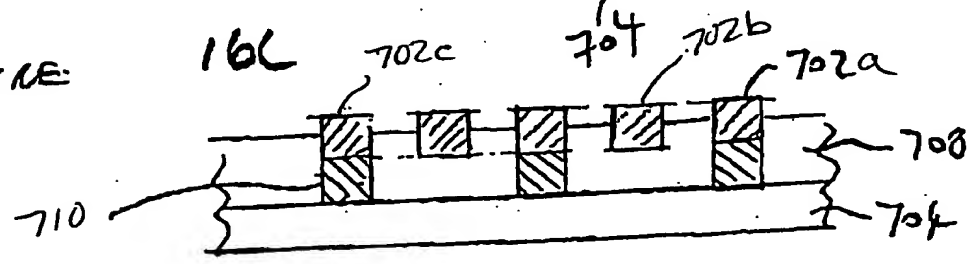
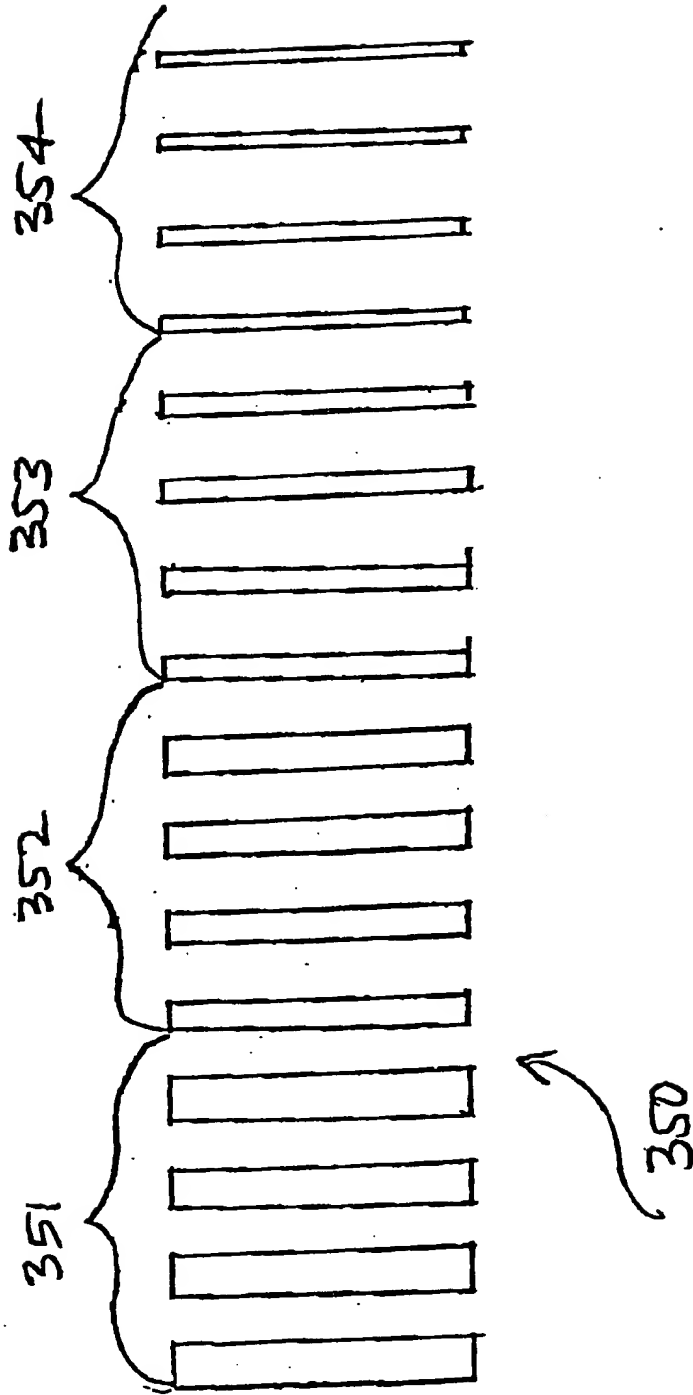


Fig. 17



382

Density #1

Density #2

Density #3

← Sx
contac

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Fig. 1A

FIGURE. 19

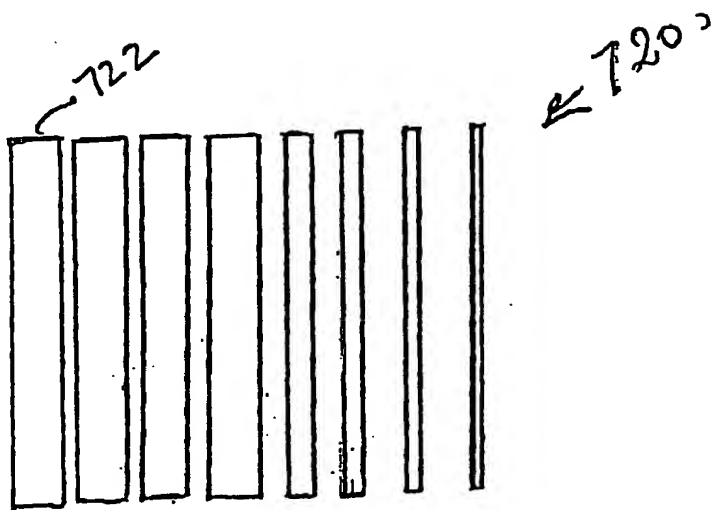
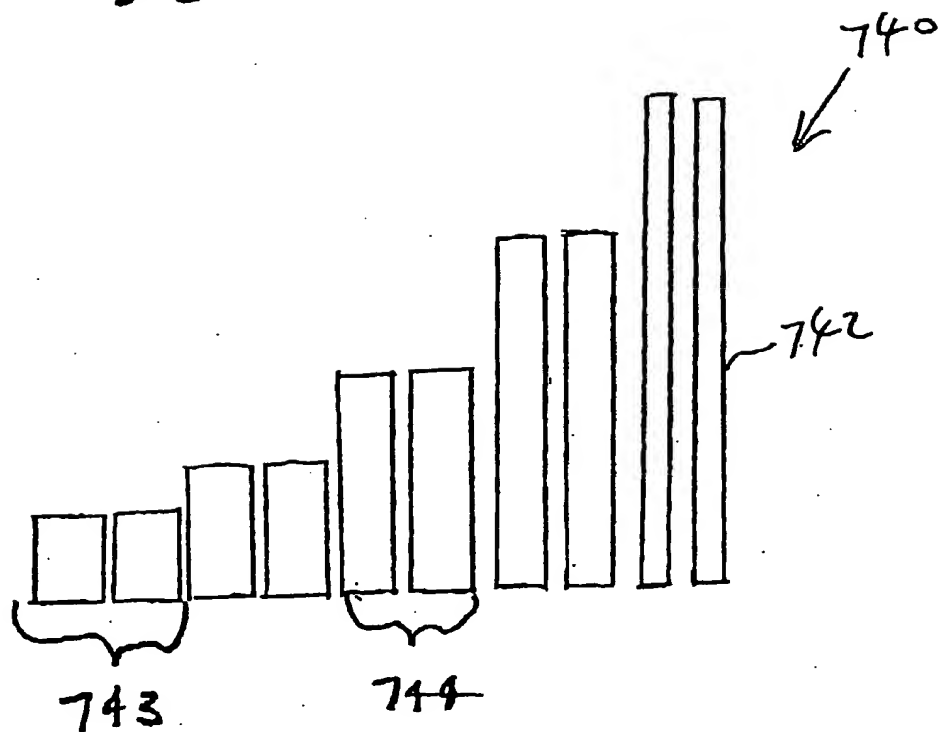


FIGURE 20



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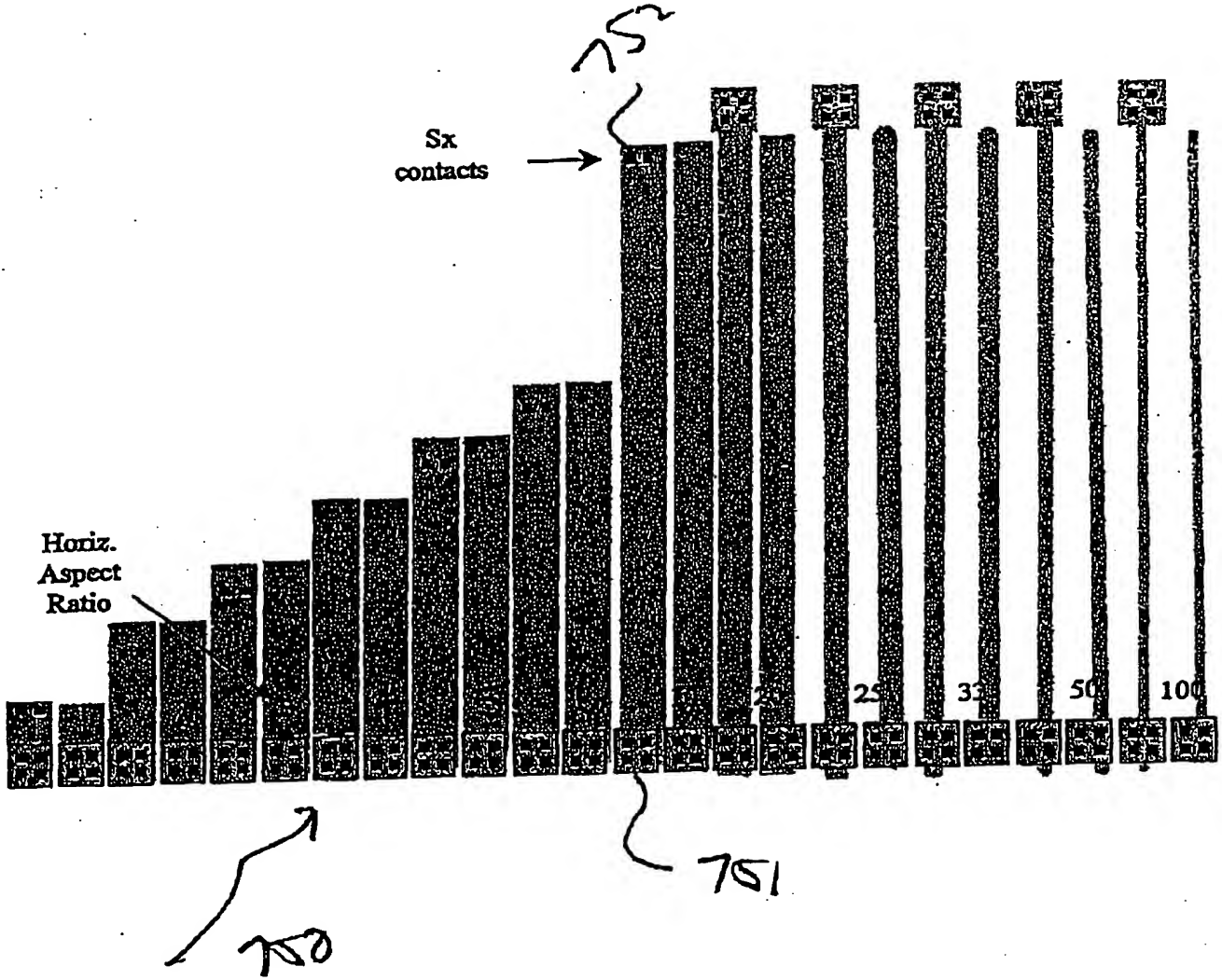


Figure 21

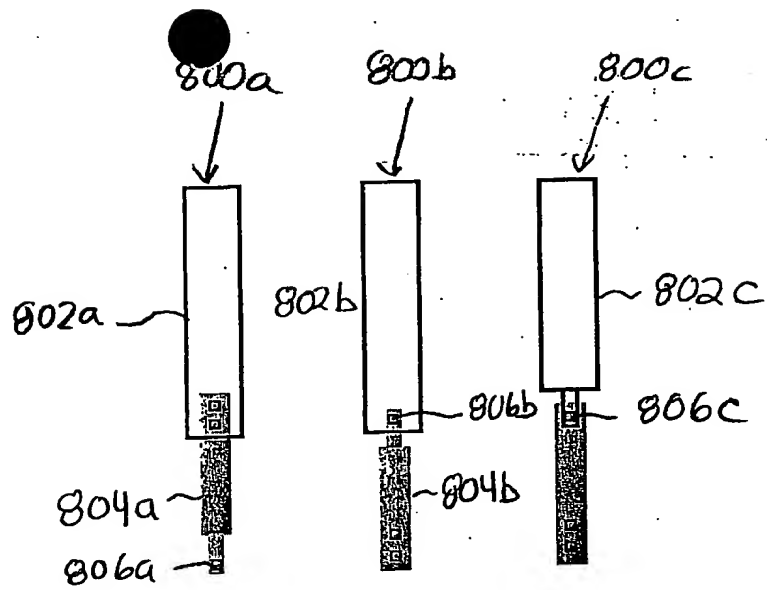


Figure 22A: X Overlay Structures: M1 to Contact, Via to M1, M2 to Via

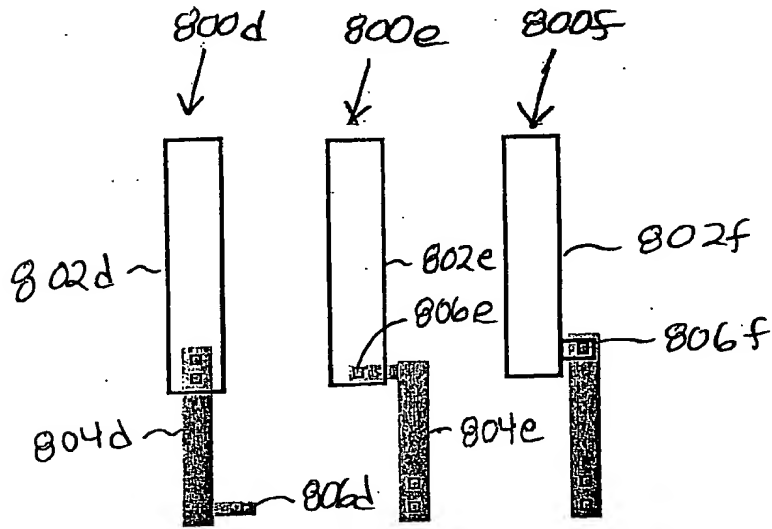


Figure 22B: Y Overlay Structures: M1 to Contact, Via to M1, M2 to Via

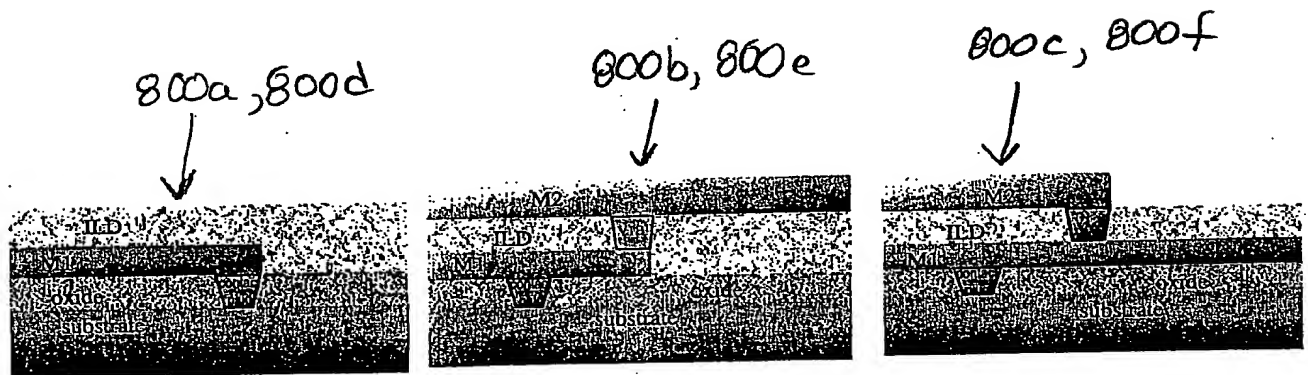


Figure 22C: Cross sections of overlay structures: M1 to Substrate, Via to M1, M2 to Via

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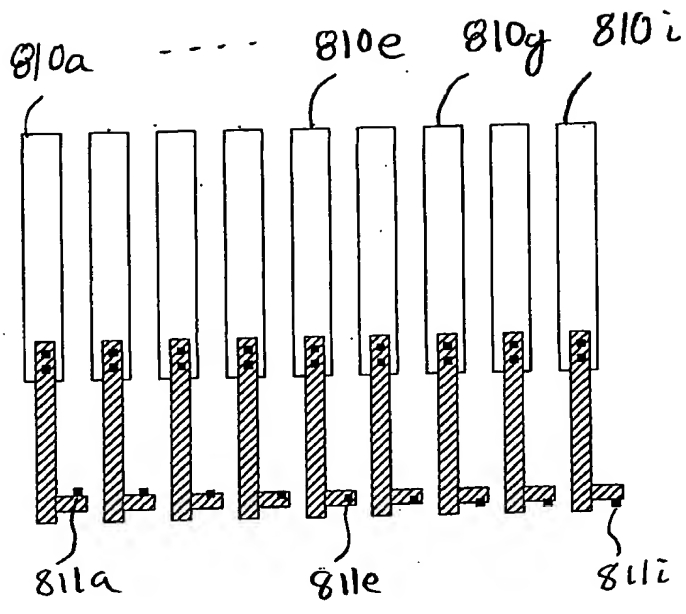


Figure 23A: A portion of the M1 to Contact, Y component, Overlay Structure

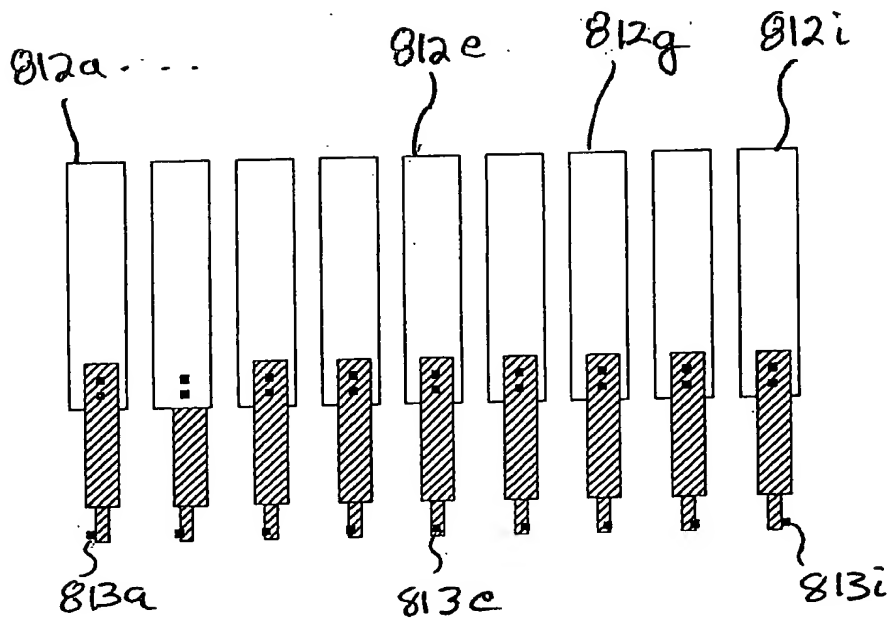


Figure 23B: A portion of the M1 to Contact, X component, Overlay Structure

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FIGURE

~~24A~~

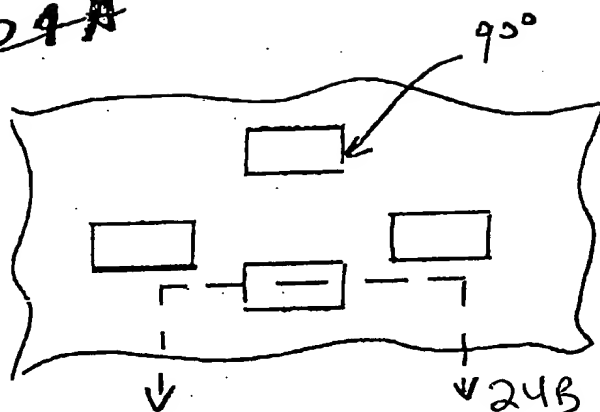
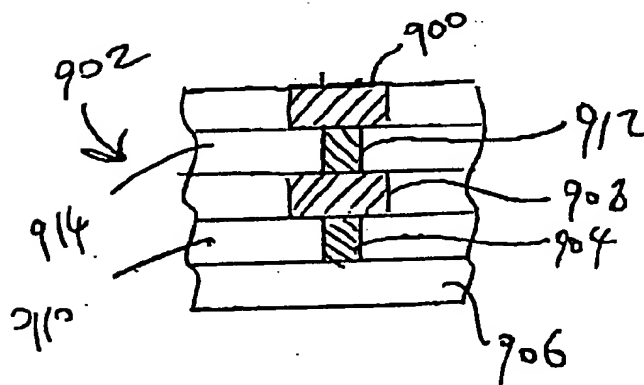


FIGURE
24B



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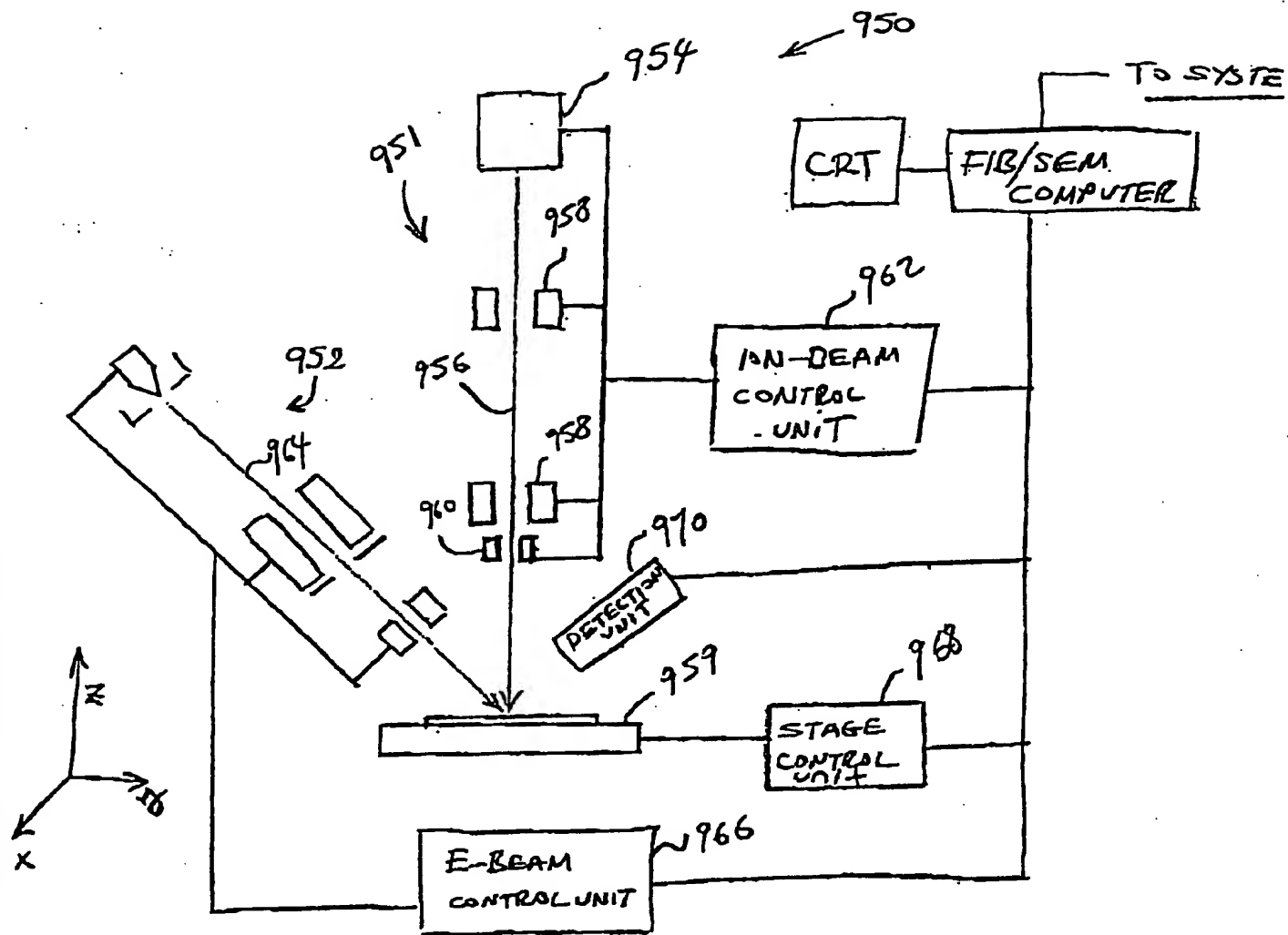


Fig. 25

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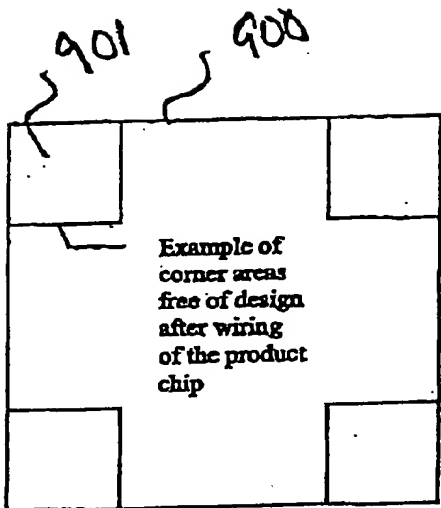


Fig. 26a: Product Chip with empty areas

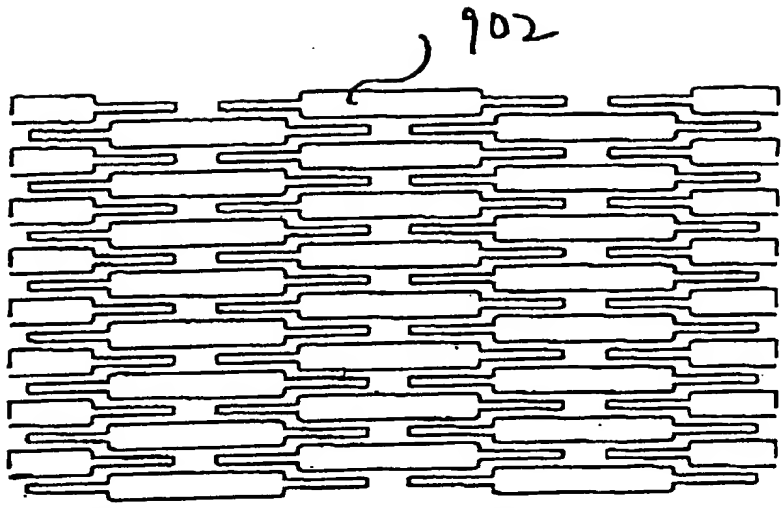


Fig. 26b: Typical "Filler Shapes" used to fill-in the empty

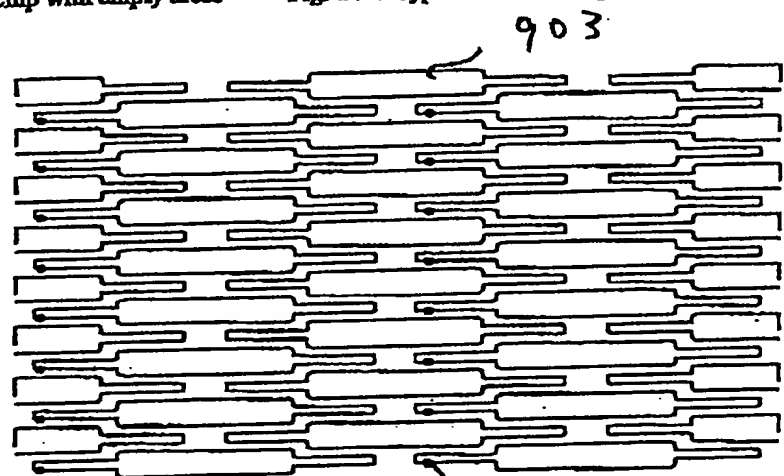
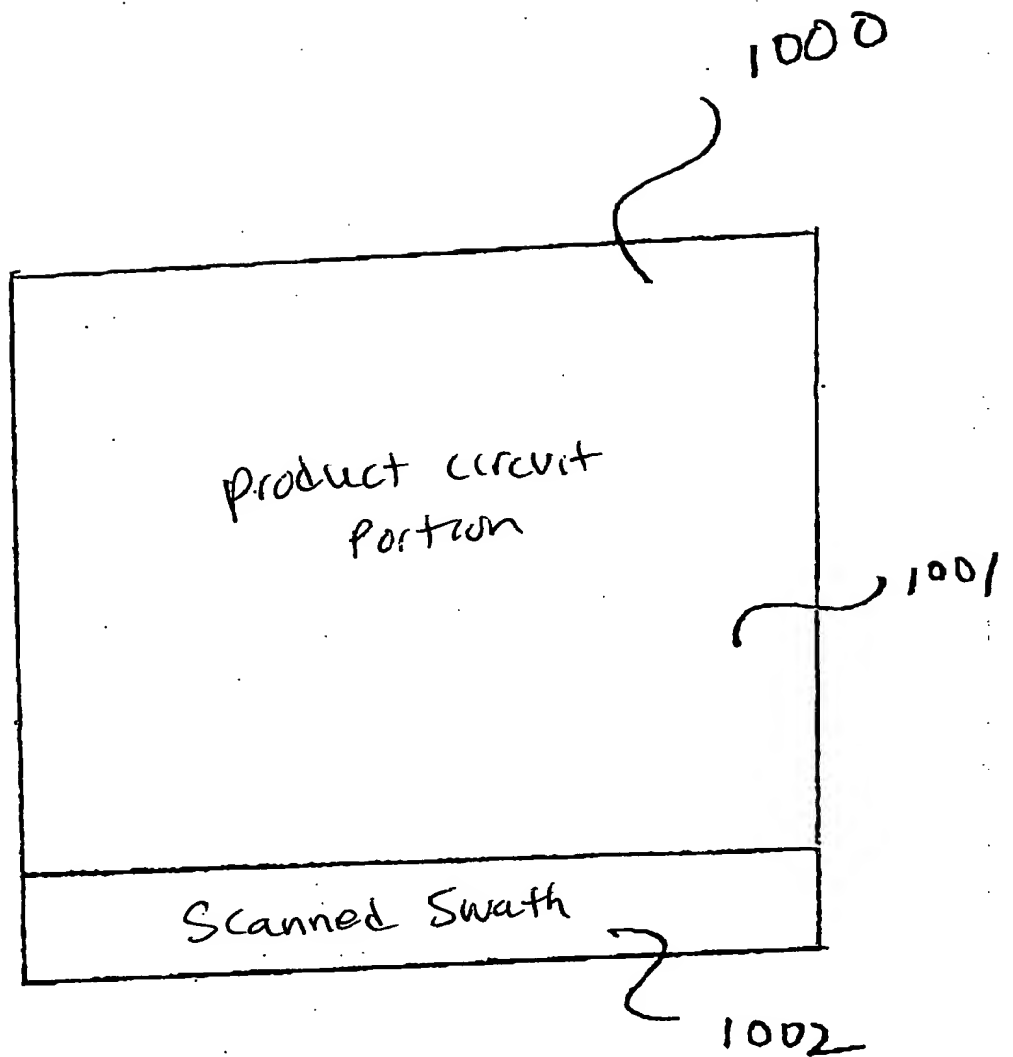


Fig. 26c: Redesign of Dummy Shapes into useful CMP Process Monitors

Fig. 27



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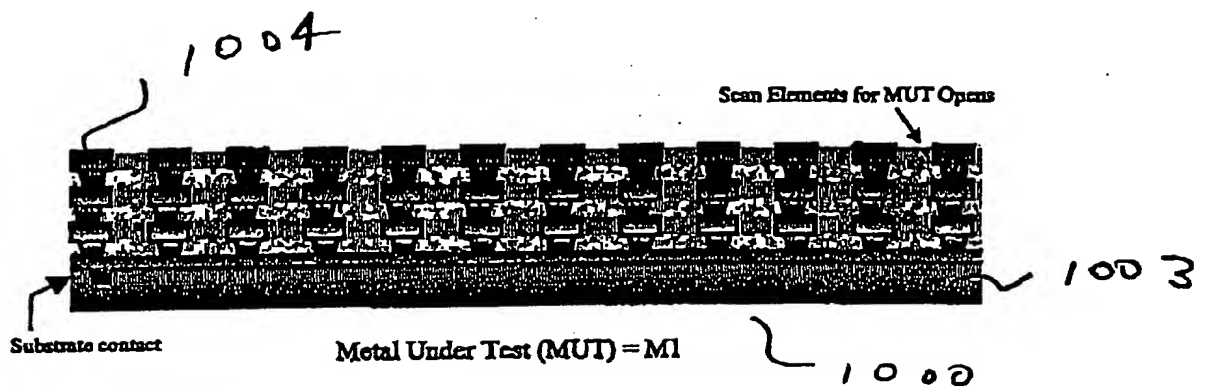
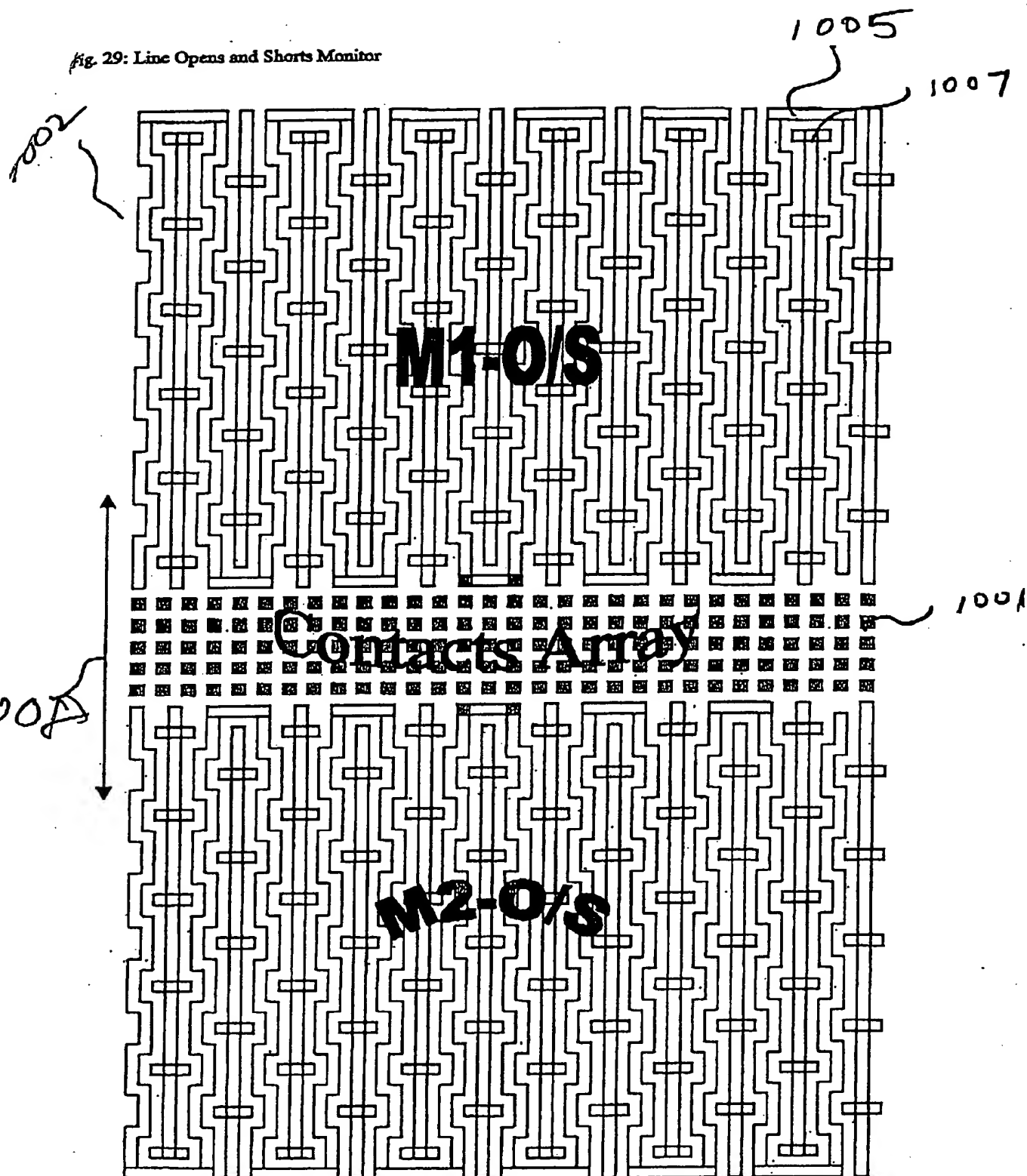
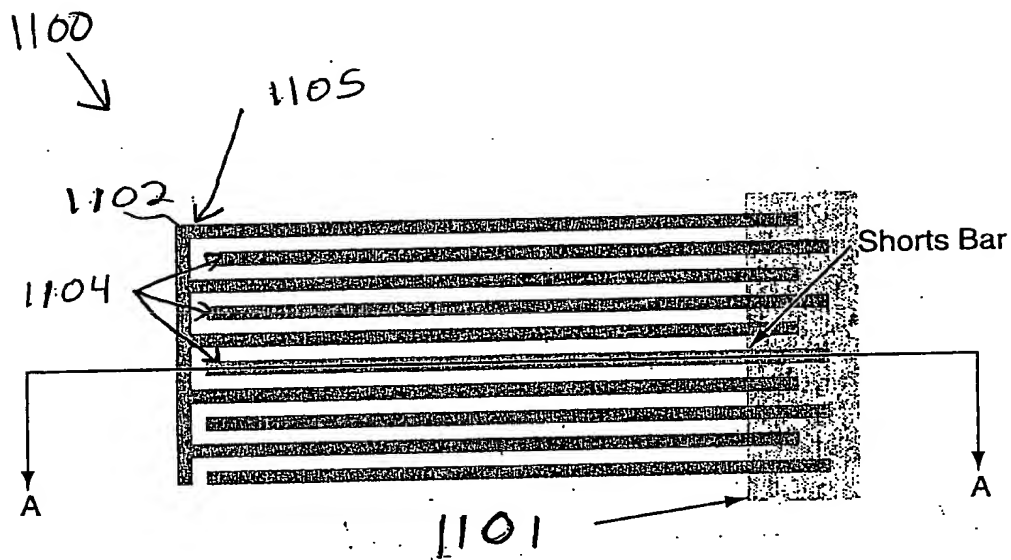


Fig. 28 : Cross-section View of the Vertical Taps over the Metal-under-Test Opens Monitor

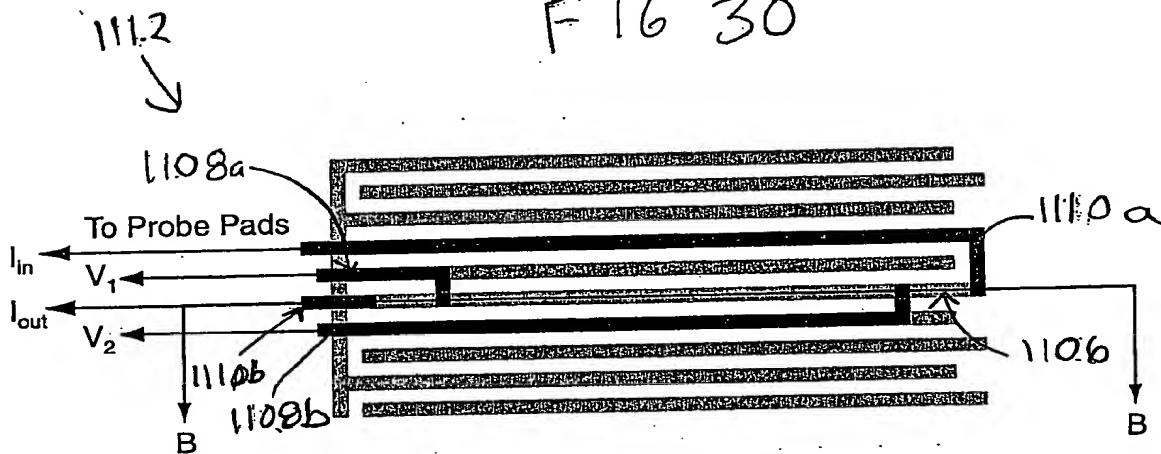
fig. 29: Line Opens and Shorts Monitor

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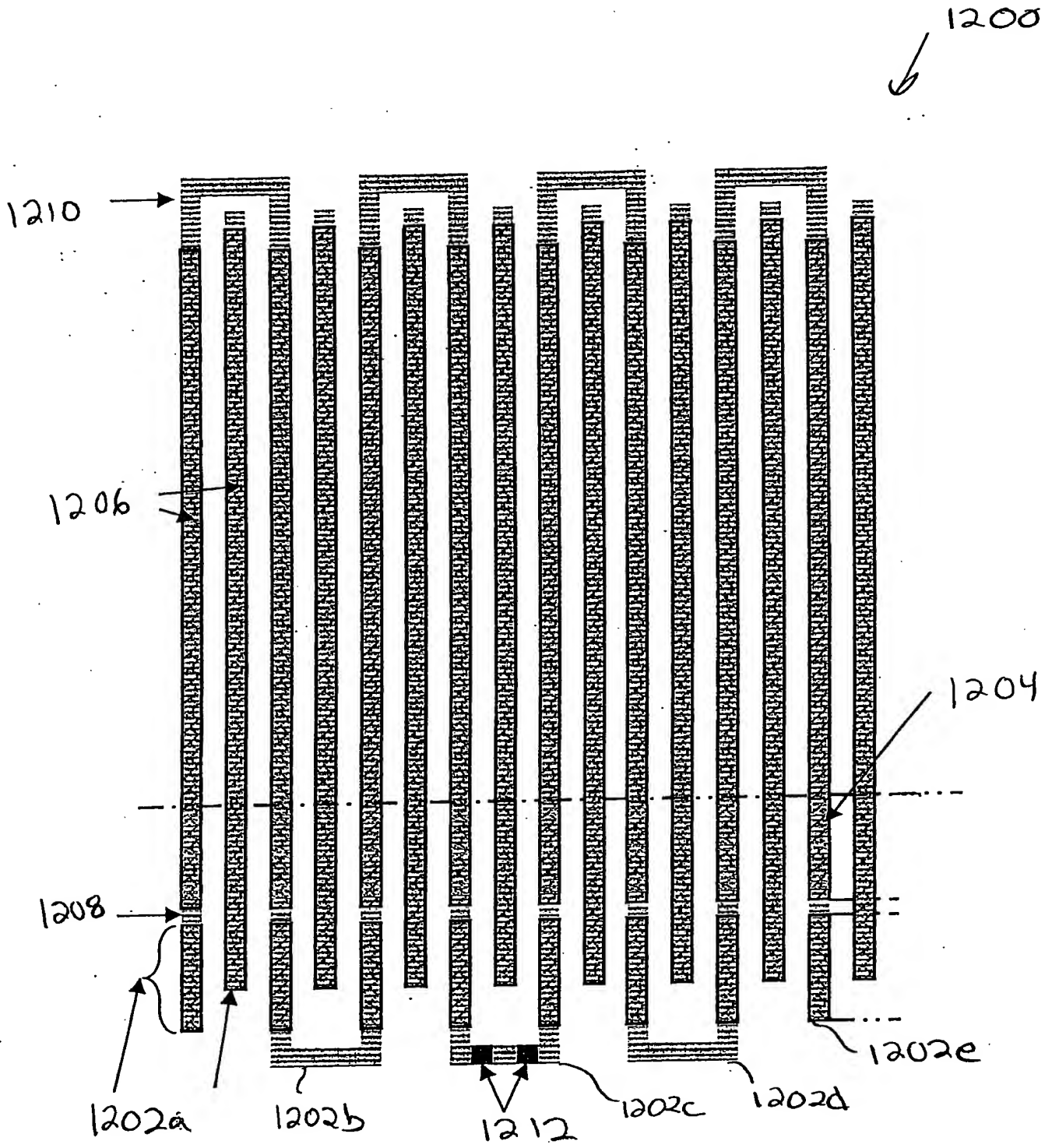


F16 30



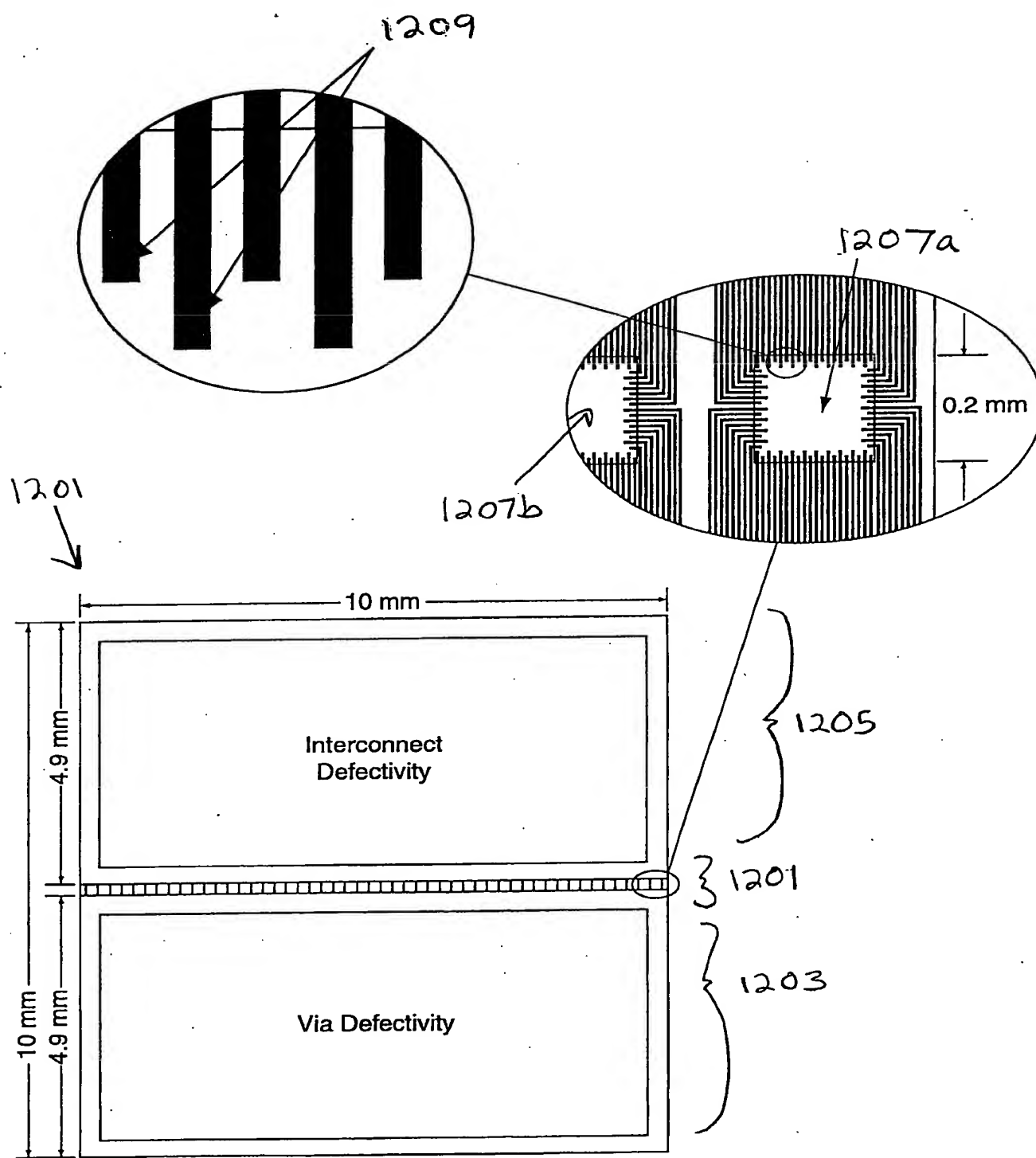
F16 31

09648095.082500



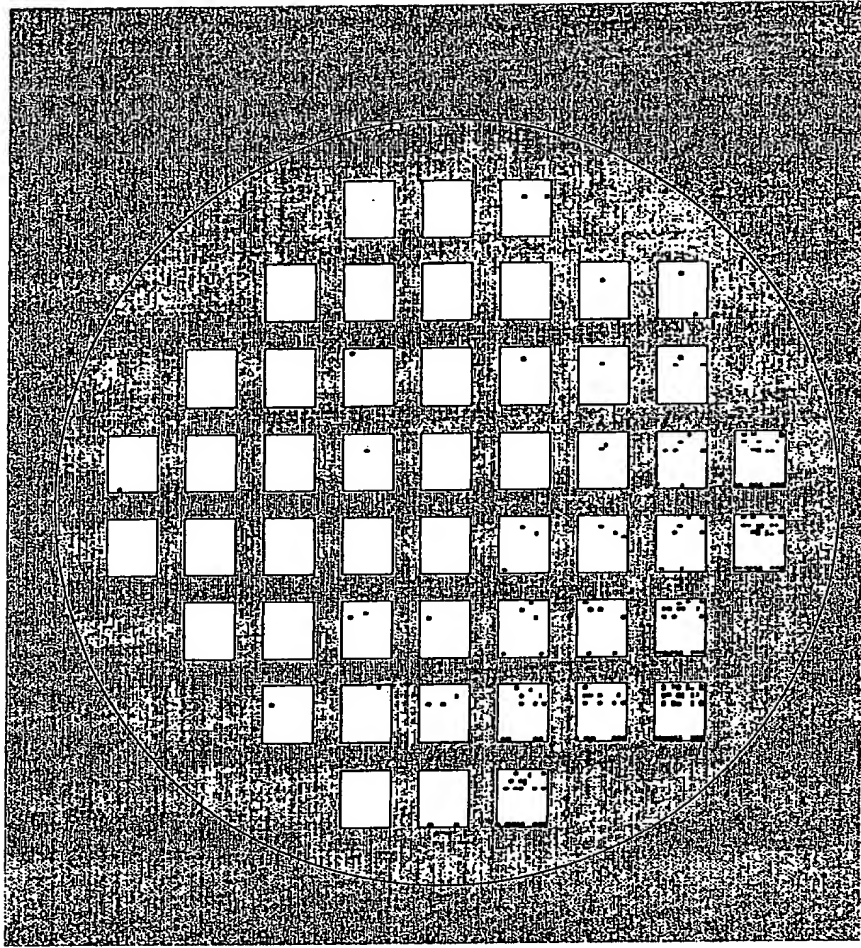
F16. 32

F16. 33



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F16. 34

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